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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/673,125

09/26/2003

Robert Stanley Tull JR.

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03/19/2008

KIRKPATRICK & LOCKHART PRESTON GATES ELLIS LLP
535 SMITHFIELD STREET
PITTSBURGH, PA 15222

EXAMINER

SUBRAMANIAN, NARAYANSWAMY

ART UNIT

PAPER NUMBER

3691

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/673,125	Applicant(s) TULL ET AL.	
	Examiner Narayanswamy Subramanian	Art Unit 3691	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/26/03, 1/10/08</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to applicants' communication filed on September 26, 2003. Original claims 1-14 are currently pending and have been examined. The rejections are stated below.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 7, 13 and 14 recite the limitation "to modify/modifying the composition of the select group of securities". This limitation lacks antecedent basis. The composition of the select group of securities has not been defined in any of the preceding steps and hence it is not clear as what is being modified. Appropriate clarification/correction is required. These claims also recite the limitations "wherein said constant is about 1" and "the average volatility measure substantially matches the predetermined constant". It is not clear what the applicant means by the terms "about 1" and "substantially matches". The metes and bounds of these limitations are unclear. The dependent claims are rejected for the same reason and by way of dependency on a rejected independent claim.

Claim 2, recites the limitation "computing the current ask price, bid price and trade price based upon market information and stored data associated with financial characteristics of the security". This limitation lacks antecedent basis. The current ask price, bid price and trade price

and the step of storing data associated with financial characteristics of the security have not been defined in any of the preceding steps. Appropriate clarification/correction is required.

Claim 8 recites the limitation “evaluate an expected investment return for the selected basket of securities in the basket of shares”. It is not clear what the applicants mean by this limitation and also this limitation lacks antecedent basis. The basket of shares has not been defined in any of the preceding steps. Appropriate clarification/correction is required.

Claim 9 recites the limitation “the investment performance of the basket of securities over time”. It is not clear what the applicants mean by this limitation and also this limitation lacks antecedent basis. The investment performance of the basket of securities has not been defined in any of the preceding steps. Appropriate clarification/correction is required.

Claim 10 recites the limitation “the trade transactions of each of said one or more selected securities”. It is not clear what the applicants mean by this limitation and also this limitation lacks antecedent basis. The trade transactions of each of said one or more selected securities have not been defined in any of the preceding steps. Appropriate clarification/correction is required.

Claim 11 recites the limitation “record of the last N transactions of each of said one or more selected securities in the basket of securities”. It is not clear what the applicants mean by this limitation, especially the term “the last N transactions”, and also this limitation lacks antecedent basis. There is no mention of N transactions of each of said one or more selected securities in any of the preceding steps. Appropriate clarification/correction is required.

The art rejections below are interpreted in light of the rejections made above.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claim 1-14 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory Subject matter.

35 USC 101 requires that in order to be patentable the invention must be a "new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof" (emphasis added).

It is not clear as to which statutory class the claimed invention of claims 1-6 and 13 belongs. The claimed invention does not fall in the process category for the following reason. Quoting from *In re Comiskey* (No. 06-1286, *Federal Circuit*) "The Supreme Court has recognized only two instances in which such a method may qualify as a section 101 process: when the process 'either [1] was tied to a particular apparatus or [2] operated to change materials to a 'different state or thing.'" In *Diehr*, the Supreme Court confirmed that a process claim reciting an algorithm could state statutory subject matter if it: (1) is tied to a machine or (2) creates or involves a composition of matter or manufacture.¹² 450 U.S. at 184. There, in the context of a process claim for curing rubber that recited an algorithm, the Court concluded that "transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." *Id.* (quoting *Benson*, 409 U.S. at 70);¹³ see also *In re Schrader*, 22 F.3d 290, 295 (*Fed. Cir.* 1994) (holding when a claim does not invoke a machine, "§ 101 requires some kind of transformation or reduction of

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subject matter”). Thus, a claim that involves both a mental process and one of the other categories of statutory subject matter (i.e., a machine, manufacture, or composition) may be patentable under § 101. However, mental processes—or processes of human thinking—standing alone are not patentable even if they have practical application. The Supreme Court has stated that “phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.” *Benson*, 409 U.S. at 67 (emphasis added). In *Flook* the patentee argued that his claims did not seek to patent an abstract idea (an algorithm) because they were limited to a practical application of that idea—updating “alarm limits” for catalytic chemical conversion of hydrocarbons. 437 U.S. at 586, 589-90. The Court rejected the notion that mere recitation of a practical application of an abstract idea makes it patentable, concluding that “[a] competent draftsman could attach some form of post-solution activity to almost any mathematical formula.” *Id.* at 590. Since all other features of the process were well-known, including “the use of computers for ‘automatic monitoring-alarming,’” the Court construed the application as “simply provid[ing] a new and presumably better method for calculating alarm limit values.” *Id.* at 594-95. The 14 See AT&T, 172 F.3d at 1355, 1358 (holding patentable “a process that uses the Boolean principle in order to determine the value of the PIC indicator” and that “require[d] the use of switches and computers”); *State Street Bank*, 149 F.3d at 1373 (“[W]e hold that the transformation of data . . . by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm.” (emphases added)); *Alappat*, 33 F.3d at 1544 (“This is not a disembodied mathematical concept which may be characterized as an ‘abstract idea,’ but rather a specific machine to produce a useful, concrete, and tangible result.” (emphases

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added)); *Arrhythmia Research Tech., Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1058-59 (Fed. Cir. 1992) (holding patentable a method for analyzing electrocardiograph signals for the detection of a specific heart condition that used “electronic equipment programmed to perform mathematical computation”). Court held the application unpatentable because “if a claim [as a whole] is directed essentially to a method of calculating, using a mathematical formula, even if the solution is for a specific purpose, the claimed method is nonstatutory.” 437 U.S. at 595 (quoting *In re Richman*, 563 F.2d 1026, 1030 (CCPA 1977)). Following the lead of the Supreme Court, this court and our predecessor court have refused to find processes patentable when they merely claimed a mental process standing alone and untied to another category of statutory subject matter even when a practical application was claimed. In *Schrader* we held unpatentable a “method constituting a novel way of conducting auctions” by allowing competitive bidding on a plurality of related items. 22 F.3d at 291. In doing so, we rejected the patentee’s argument that the process used a machine. Two of the alleged machines—a “display” in the front of the auction room and “a closed-circuit television system” for bidders in different cities—were not claimed by the patent, and the third—a “record” in which bids could be entered—could be “a piece of paper or a chalkboard.” *Id.* at 293-94. We therefore concluded that the patent impermissibly claimed unpatentable subject matter. Similarly, in *In re Warmerdam*, 33 F.3d 1354 (Fed. Cir. 1994), we held unpatentable a process for controlling objects so as to avoid collisions because the key steps of “locating a medial axis” and “creating a bubble hierarchy” described “nothing more than the manipulation of basic mathematical constructs, the paradigmatic ‘abstract idea.’” *Id.* at 1360. A machine was not required, *id.* at 1358, nor was there any indication that the process operated on a manufacture or composition of matter. Decisions of our predecessor court

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are in accord. *In re Meyer*, 688 F.2d 789, 796 (CCPA 1982), held that “a mental process that a neurologist should follow” was not patentable because it was “not limited to any otherwise statutory process, machine, manufacture, or composition of matter.” Id. at 795. Similarly, *In re Maucorps*, 609 F.2d 481 (CCPA 1979), held that an invention “ultimately . . . directed toward optimizing the organization of sales representatives in a business” was unpatentable. Id. at 482, 486. See also *Alappat*, 33 F.3d at 1541 (“*Maucorps* dealt with a business method for deciding how salesmen should best handle respective customers and *Meyer* involved a ‘system’ for aiding a neurologist in diagnosing patients. Clearly, neither of the alleged ‘inventions’ in those cases falls within any § 101 category.”). The steps of the method are untied to another category of statutory subject matter and hence the claimed invention does not qualify as a process under 35 U.S.C 101.

Claims 7-12 and 14 of the disclosed invention is inoperative and therefore lacks utility.

Claims 7-12 and 14 merely recite elements of a system (“computer software programs” and “a comparator” correspond to software program elements and not tangible hardware components) without showing any ability to realize functionality of the recited elements (i.e. functional descriptive material per se) and therefore is rendered inoperative lacking any utility. Note that a computer (or software program) code cannot by itself perform the underlying function until it is loaded on some computer readable memory and accessed by the computer (or a processor). Functional descriptive material, per se, is not statutory. This is exemplified in *In re Warmerdam* 31 USPQ2d 1754 where the rejection of a claim to a disembodied data structure was affirmed. Thus a claim to a data structure, per se, or other functional descriptive material, including computer programs, per se, is not patent eligible subject matter.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fabozzi et al. (Reference C01 in IDS of September 26, 2003).

Claims 1 and 7, Fabozzi discloses a method and computer-based system for selecting entries in a basket of securities designed to conform to a performance index of a capital market over a predetermined period of time, comprising the steps of: sorting securities of the capital market in accordance with a market valuation at a given initial time (See Fabozzi Page 907 Paragraph 6); providing a measure of volatility associated with each of the sorted securities of the given time; computing an average volatility measure associated with a select group of securities; comparing the average volatility measure of the select group of securities to a predetermined constant; based on the comparison, modifying the composition of the select group of securities and repeating the steps of computing and comparing until a basket of securities is selected for which the average volatility measure substantially matches the predetermined constant (See Fabozzi Page 907 Paragraph 3); computing a price measure associated with the basket of securities; monitoring the price measure associated with the basket of securities over the predetermined period of time from the given initial time; and periodically adjusting the composition of the basket of securities based on a comparison of the monitored price measure

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associated with the basket of securities and the performance index of the capital market (See Fabozzi Page 908 Paragraph 4). Eliminating securities below a certain size implies sorting securities in accordance with a market valuation. Using linear programming to form the portfolio is interpreted to include the steps of comparing the average volatility measure of the select group of securities to a predetermined constant, and based on the comparison, modifying the composition of the select group of securities and repeating the steps of computing and comparing until a basket of securities is selected for which the average volatility measure substantially matches the predetermined constant. The step of computing the expected return in the objective function implies computing a price measure associated with the basket of securities. The steps of re-optimizing and rebalancing is interpreted to include the steps of monitoring the price measure associated with the basket of securities over the predetermined period of time from the given initial time and periodically adjusting the composition of the basket of securities based on a comparison of the monitored price measure associated with the basket of securities and the performance index of the capital market. The steps disclosed by Fabozzi are too complex and time consuming to be performed without the aid of a computer and hence a computer system with computer software programs is implied by the disclosure.

Fabozzi does not explicitly teach the feature wherein the predetermined constant is about 1.

Official notice is taken that constructing a portfolio with the beta of the portfolio substantially equal to one, is old and well known in the art. Beta is a measure of volatility and beta of one for a portfolio implies that the volatility of the portfolio substantially matches the

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volatility of the market index. Hence substantially matching the beta to one helps the portfolio manager keep the systematic risk of the portfolio close to the market risk of the market index.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Fabozzi to include the missing feature. The motivation to combine is that it would help the manager maintain the systematic risk of the portfolio close to the market risk of the market index.

Claims 2-3, the features comprising for each security in the basket of securities computing the current ask price, bid price and trade price based upon market information and stored data associated with financial characteristics of the security, determining the current aggregate ask prices, bid prices and trade prices for the basket of securities, and adjusting the current aggregate ask prices, bid prices and trade prices for the basket of securities to include income accrued from the basket of securities and management and trade settlement expenses associated with the basket of securities is old and well known. These features help in the computation of risk and return for the portfolio after considering all the expenses and income from trading the securities in the portfolio.

Claim 4, Fabozzi discloses wherein the predetermined period of time is longer than one year (See Fabozzi Page 901 Paragraph 2). A complete market cycle implies a period of more than one year.

Claim 5, the feature herein the average volatility measure is a beta factor is old and well known. (See discussion claim 1).

Claim 6, the features of designating a set of constraints on the current financial reports on securities in the capital market; designating a level of certainty regarding future events;

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designating predicted future values of economic variables; and executing a mathematical programming optimization function using the designated set of constraints on the current financial reports on the securities, level of certainty regarding future events and predicted future values of economic variables is old and well known. These features would have helped a portfolio manager from understanding about how their portfolio will perform under various market conditions and thereby develop suitable investment strategies.

Claims 8-12, the features of a computer software programs to evaluate an expected investment return for the selected basket of securities in the basket of shares over the predetermined period of time, to record the investment performance of the basket of securities over time, and to generate a report containing information about the price measure associated with the basket of securities and the performance index of the capital market; receiving input from a global communication network for reporting the trade transactions of each of said one or more selected securities and a memory for storing a record of the last N transactions of each of said one or more selected securities in the basket of securities are old and well known. These features would help an investor receive timely information about the performance of their portfolio and also help them compare the performance of their portfolio with the market interest.

Claims 13 and 14, Fabozzi discloses a method and computer-based system for selecting entries in a basket of securities designed to conform to a performance index of a capital market over a predetermined period of time, comprising the steps of: sorting securities of the capital market in accordance with a market valuation at a given initial time (See Fabozzi Page 907 Paragraph 6); providing a measure of volatility associated with each of the sorted securities of

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the given time; computing an average volatility measure associated with a select group of securities; comparing the average volatility measure of the select group of securities to a predetermined constant; based on the comparison, modifying the composition of the select group of securities and repeating the steps of computing and comparing until a basket of securities is selected for which the average volatility measure substantially matches the predetermined constant (See Fabozzi Page 907 Paragraph 3); computing a price measure associated with the basket of securities; monitoring the price measure associated with the basket of securities over the predetermined period of time from the given initial time; and periodically adjusting the composition of the basket of securities based on a comparison of the monitored price measure associated with the basket of securities and the performance index of the capital market (See Fabozzi Page 908 Paragraph 4). Eliminating securities below a certain size implies sorting securities in accordance with a market valuation. Using linear programming to form the portfolio is interpreted to include the steps of comparing the average volatility measure of the select group of securities to a predetermined constant, and based on the comparison, modifying the composition of the select group of securities and repeating the steps of computing and comparing until a basket of securities is selected for which the average volatility measure substantially matches the predetermined constant. The step of computing the expected return in the objective function implies computing a price measure associated with the basket of securities. The steps of re-optimizing and rebalancing is interpreted to include the steps of monitoring the price measure associated with the basket of securities over the predetermined period of time from the given initial time and periodically adjusting the composition of the basket of securities based on a comparison of the monitored price measure associated with the basket of securities and the

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performance index of the capital market. The steps disclosed by Fabozzi are too complex and time consuming to be performed without the aid of a computer and hence a computer system with computer software programs is implied by the disclosure.

Fabozzi does not explicitly teach the feature wherein the security is an equity security and the predetermined constant is about 1.

Official notice is taken that constructing an equity portfolio with the beta of the portfolio substantially equal to one, is old and well known in the art. Beta is a measure of volatility commonly used with equity securities and beta of one for a portfolio implies that the volatility of the portfolio substantially matches the volatility of the market index. Hence substantially matching the beta to one helps the portfolio manager keep the systematic risk of the equity portfolio close to the market risk of the market index.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Fabozzi to include the missing feature. The motivation to combine is that it would help the manager maintain the systematic risk of the portfolio close to the market risk of the market index.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure are listed on the enclosed PTO-892.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Narayanswamy Subramanian whose telephone number is (571) 272-6751. The examiner can normally be reached Monday-Thursday from 8:30 AM to 7:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's

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supervisor, Alexander Kalinowski can be reached at (571) 272-6771. The fax number for Formal or Official faxes and Draft to the Patent Office is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PMR or Public PAIR. Status information for unpublished applications is available through Private PMR only. For more information about the PMR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Narayanswamy Subramanian/
Primary Examiner
Art Unit 3691

March 14, 2008